Claims

What is claimed is:

1. A welding system, comprising:
a device adapted for wireless communication; and,

at least one welding node having a wireless communications interface wherein the device and the at least one welding node wirelessly communicate information *via* a frequency adjusting wireless communication protocol.

2. The welding system of claim 1 wherein the at least one welding node is one of a power source, a gas controller, a wire feeder, a contact tip, a dresser, a gas mixer, a gas sneezer, a gas controller, a clamp actuator, a robot arm/beam/torch manipulator, a laser seam tracker, a wire drive and gun, a water cooler, a welder, a part handler, a torch travel and a user control.

3. The welding system of claim 1 wherein the device and the at least one welding node communicate wirelessly utilizing one of Bluetooth, ConnexRF and point-to-multipoint short-range RF (radio frequency) formats.

4. The welding system of claim 1 wherein the device and the at least one welding node communicate wirelessly utilizing Bluetooth format *via* at least one of RFComm, OBEX, Service Discovery Protocol and/or logical link control and adaptation protocols.

5. The welding system of claim 1 wherein the device and the at least one welding node communicate wirelessly utilizing a format that provides frequency spread spectrum hopping or direct sequence spread spectrum.

6. The welding system of claim 1 wherein the information communicated by the device and the at least one welding node is at least one of weld procedures, parameters, diagnostic information, error logs, machine metrics, system metrics, specifications, manuals, machine enhancements, files for specific user application and sensor feedback.

7. A welding system, comprising:

a first welding cell comprising at least one welding node having a wireless communications interface; and,

at least one other welding cell comprising at least one welding node having a wireless communications interface wherein the at least one welding node of the first welding cell and the at least one welding node of the at least one other welding cell communicate wirelessly with each other *via* a frequency adjusting wireless communication protocol.

8. The welding system of claim 7 wherein the at least one welding node of the first welding cell and the at least one welding node of the at least one other welding cell communicate wirelessly utilizing one of Bluetooth, ConnexRF and point-to-multipoint short-range RF (radio frequency) format.

9. The welding system of claim 7 wherein the at least one welding node of the first welding cell and the at least one welding node of the at least one other welding cell communicate wirelessly utilizing Bluetooth format *via* at least one of RFComm, OBEX, Service Discovery Protocol and/or logical link control and adaptation protocols.

10. The welding system of claim 7 wherein the at least one welding node of the first welding cell and the at least one welding node of the at least one other welding cell are one of a power source, a gas controller, a wire feeder, a contact tip, a dresser, a gas mixer, a gas sneezer, a gas controller, a clamp actuator, a robot arm/beam/torch

manipulator, a laser seam tracker, a wire drive and gun, a water cooler, a welder, a part handler, a torch travel and a user control.

11. The welding system of claim 7 wherein the device and the at least one welding node communicate wirelessly utilizing a format that provides frequency spread spectrum hopping or direct sequence spread spectrum.

12. The welding system of claim 7 wherein information communicate between the at least one welding node of the first welding cell and the at least one welding node of the at least one other welding cell is at least one of weld procedures, parameters, diagnostic information, error logs, machine metrics, system metrics, specifications, manuals, machine enhancements, files for specific user application and sensor feedback.

13. A welding system, comprising:

at least one welding cell comprising at least one welding node having a wireless communications interface; and,

a gateway device adapted for wireless communication with the at least one welding node *via* a frequency adjusting wireless communication protocol.

14. The welding system of claim 13 wherein the gateway device is one of a Field-Programmable Gate Array (FPGA), a programmable logic device, a local server, a global factory controls and a computer system.

15. The welding system of claim 13 wherein the gateway device is further adapted to communicate with at least one of wide area networks, local area networks and personal area networks.

16. The welding system of claim 13 wherein the at least one welding node cell and the gateway device communicate wirelessly utilizing one of Bluetooth, ConnexRF and point-to-multipoint short-range RF (radio frequency) format.

17. The welding system of claim 13 wherein the gateway device and the at least one welding node communicate wirelessly utilizing Bluetooth format *via* at least one of RFComm, OBEX, Service Discovery Protocol and/or logical link control and adaptation protocols.

18. The welding system of claim 13 wherein the gateway device and the at least one welding node of the at least one other welding cell are one of a power source, a gas controller, a wire feeder, a contact tip, a dresser, a gas mixer, a gas sneezer, a gas controller, a clamp actuator, a robot arm/beam/torch manipulator, a laser seam tracker, a wire drive and gun, a water cooler, a welder, a part handler, a torch travel and a user control.

19. The welding system of claim 13 wherein the gateway device and the at least one welding node communicate wirelessly utilizing a format that provides frequency spread spectrum hopping or direct sequence spread spectrum.

20. A method for providing wireless communication in a welding system comprising:

generating an RF field around at least one welding node;

generating an RF field around a wireless communications device;

establishing communication between the wireless communications device and the at least one welding node *via* a frequency adjusting wireless communication protocol;

receiving information *via* the wireless communications device from the at least one welding node; and,

transmitting information to the at least one welding node from the wireless communications device.

21. The method of claim 20, further comprising at least one of the following acts:

monitoring wireless communications;

determining whether a communications error threshold has been exceeded; and,

if a communications error threshold has been exceeded, placing a welding node into a fail safe condition.

22. A method for providing wireless communications in a welding system comprising:

generating an RF field around a first welding node;

generating an RF field around at least one other welding node;

establishing communication between the first welding node and the at least one other welding node *via* a frequency adjusting wireless communication protocol;

the at least one other welding node receiving information wirelessly from the first welding node; and,

the at least one other welding node transmitting information wirelessly to the first welding node.

23. A wireless signal for communicating welding information, comprising:

a device adapted to communicate *via* a wireless signal utilizing a frequency adjusting wireless communication protocol; and,

at least one welding node having a wireless communications interface adapted to communicate *via* the wireless signal.

24. The wireless signal of claim 23 wherein the wireless signal includes at least one of weld procedures, parameters, diagnostic information, error logs, machine

metrics, system metrics, specifications, manuals, machine enhancements, files for specific user application and sensor feedback.

25. A wireless signal for communicating welding information, comprising:

a first welding node having a wireless communications interface adapted to communicate *via* a wireless signal utilizing a frequency adjusting wireless communication protocol; and,

at least one other welding node having a wireless communications interface adapted for wireless communication with the first welding node *via* the wireless signal.

26. A welding system, comprising:

means for a first welding node to wirelessly communicate utilizing a frequency adjusting wireless communication protocol; and,

means for an Nth welding node to wirelessly communicate information with the first welding node wherein the information includes at least one of weld procedures, parameters, diagnostic information, error logs, machine metrics, system metrics, specifications, manuals, machine enhancements, files for specific user application and sensor feedback.